U.S. Containerized Grain and Oilseed Exports

Industry Survey

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Containerization has evolved from an industry serving niche markets to an industry creating niche market opportunities. Although the grain and oilseed industry is dominated by bulky, homogenized product marketing that is heavily reliant on economies of scale in delivering competitively priced commodities, technological advances, foreign market privatization, and declining global market transaction costs have supported diversification of this industry in niche markets such as small-volume containerized products. The findings of this research suggest that an established and growing U.S. shipper population is active in marketing containerized grains and oilseed products. A survey of shippers suggests that premiums for containerized grain and oilseed products are $5 per hundredweight, compared with premiums for the local bulk counterpart market. The net return to shippers is opaque as business practices and market fundamentals influence the costs associated with delivering the product to a customer overseas versus a local grain terminal or processor. Assuming that market activity is positively correlated to profitability, the grain and oilseed container shippers appear to be achieving acceptable levels of profit. Shippers report that container exports increased annually between 2000 and 2002, and they are projecting it will increase another 20% by 2005. Although many factors affect industry ability to realize this growth, shippers deem ocean freight rates as most crucial. Ocean liner routes and services, distance to container terminal, and foreign buyer information are also rated as having above-average importance.

Intermodal freight transport has been transformed by the technological and marketing innovations of recent decades. The early (before 1960) container ocean market offered retrofitted dry cargo and oil tanker vessels with capacities under 1,000 20-ft equivalent units (TEUs). Today's new-build container ships offer capacities and associated economies of scale for hauling more than 6,000 TEUs with service options such as refrigeration. High-value cargos have long used the container as a cost-effective means for relocating products to serve foreign customers. More recently, operational efficiencies, increased vessel capacity, and decreasing container construction costs have created opportunities for lower-value cargos to also use this flexible and cost-effective ocean freight transport option. As industries have integrated the container option into their logistics operations, the scope of container markets, equipment, and products has grown substantially. One segment in the lower-value container cargo has developed in the agricultural industry. It is the containerized grain and oilseed products—traditionally handled in large, bulk movements—that are investigated in this research.

The overall trend toward containerization in agricultural shipping is evident in temporal statistics. By weight, 15% of all agricultural product exports are shipped by container, up from 9% in 1992. By value, over 52% of all U.S. agricultural trade is now shipped via container. This trend is evident in traditionally bulk-shipped commodities as well. Table 1 shows the percentage of containerized shipments for soybeans, animal feed, and pulses (commodities typically shipped bulk) in 1992 and 2002 (*1*).

It is estimated that more than 600 U.S. companies are currently involved in shipping containerized grain and grain products to more than 130 countries (*1*). The prevalence of container shipments has trended upward over the past decade, as illustrated by annual export volumes for animal feed and soybean markets (Figure 1). Container export TEU volumes have increased by 500% and 200% for soybean and animal feed industries, respectively, over the past decade. (Note: This estimate includes barley, cottonseed, corn, flaxseed, oats, rye, sorghum, soybeans, sunflowers, and wheat. The TEU commonly designates a 20-ft container.) The animal feed and soybean markets are selected for this illustration because they have been identified as larger and more consistent container markets among the bulk grain and oilseed products in historical data (*1*).

Although data sources do offer evidence that this container segment of the U.S. grain and oilseed industry exists, the activities and expectations are largely characterized by anecdotal information. Export data do suggest that this industry is experiencing growth, because containerized grain and oilseed exports, considering soybean, corn, wheat, barley, sorghum, and oats, totaled nearly 25,700 TEUs in 2002. This volume represents a 49% increase in volume compared with the volume of container exports of these commodities in 2000. Pulse crops, which were also considered in this study, totaled 6,500 TEUs in 2002 compared with 16,600 TEUs in 2000. Pulse crop exports may vary significantly from year to year, for this market is tied rather closely to U.S. food aid programs. As U.S. agricultural producers seek to serve existing markets with new products and identify opportunities to serve new markets, containerization offers a broad scope in its flexibility and globalization.

Containerization allows the producer to extend control of the product from field to customer rather than from field to local terminal, introducing new sources for opportunity, risk, and profit. Thus, it is important to understand current practices and expectations of shippers so that proactive and prudent decisions support continued diversification into this sector of the global agricultural market. The purpose of

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Transportation Research Record: Journal of the Transportation Research Board, No. 1873, TRB, National Research Council, Washington, D.C., 2003, pp. 120–125.

TABLE 1 Containerized U.S. Exports, Share by Market Weight

	1992	2002
Soybeans	0.4%	1.8%
Animal Feed	2.6%	6.7%
Pulses	66.0%	70.0%

SOURCE: PIERS

this research is to develop a profile of the containerized grain and oilseed market with primary data. This research augments the broad industry profile developed with secondary data sources in the first phase of the project (*2*). In this research is an overview of the survey methodology and administration. The findings, including a profile industry structure, commodity characteristics, marketing practices, and expectations, are presented. Finally, there is a summary of the research process and its conclusions.

CONSTRUCTING AND ADMINISTERING THE SURVEY

Investigating the niche grain market is a challenge, considering that the focus market and participant base is loosely defined as U.S. shippers' exporting containerized unprocessed grain and oilseeds. Therefore, a committee of nongovernmental and private industry experts was consulted in developing the survey instrument and identifying the survey population. The cooperative survey development process was beneficial in defining the scope and content of the survey, and in supplementing the initial mailing list. It was determined that a concise mail survey, directed to ascertain baseline information about shippers and activities, would likely elicit the best response from shippers. The survey was designed to cover four aspects of the grain container market: shipper characteristics, marketing practices, commodity activity, and industry growth factors.

The multiphase survey process in this project was itself a learning experience. An initial mail survey was sent to 570 potential shipper respondents. It was supplemented by a telephone survey of a random sample of those shippers and a telephone survey of 40 additional potential containerized grain and oilseed shippers. In total, a response rate of 37% was generated from the response of 228 businesses to the survey. Twenty percent of these businesses reported that they were active in marketing containerized grain and oilseeds to foreign customers.

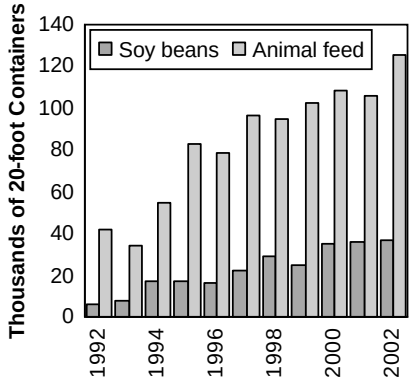

FIGURE 1 U.S. containerized soybean and animal feed exports.

A test of the survey was conducted by eliciting the cooperation of several shippers known to be active in the industry in completing the survey before the initial mailing. Minor modifications were made to survey content based on the suggestions by these shippers. The initial survey was administered by mail. Approximately 570 surveys were mailed to shippers located throughout the United States, with the survey population residing in 38 of the 48 contiguous states. The largest population segment—133 of the potential shipper respondents or 23%—resided in California. Those shippers were selected because they had been identified as grain and oilseed container exporters by the *Journal of Commerce Port Import Export Reporting Services* [PIERS; (*1*)]. The list also included several shippers that had been identified by the industry advisory group as missing on the original mailing list. The mail survey elicited 14 responses from grain container exporters. Due to the poor response rate to the initial survey, a second mailing of the survey to nonrespondents was not conducted.

Then it was determined that a follow-up to the survey would be a telephone survey of a random sample of shippers that had received the initial mail survey. Approximately one-third of the initial survey population was contacted by telephone. As with the mail survey, the telephone survey included a qualifier question asking the business if they shipped field crops by container. The telephone survey quickly revealed factors that had led to the low response to the mail survey. The primary reasons for nonresponse were that the shipper was not active in shipping containerized grain and oilseed products, or that the business was strictly a third-party participant in the transaction that was providing logistics services. Both reasons for a lack of response were expected, because there had been a broad scope for identifying the shipper population, based on standard industrial classification product codes and commodity descriptions used in shipment documentation. However, the prevalence of those businesses in the potential shipper population had been grossly underestimated. Only one shipper that was contacted and confirmed participation in shipping containerized grain products declined to participate in the survey. The telephone follow-up resulted in 188 additional responses. Of those respondents, 31 confirmed that they were active grain and oilseed shippers and completed the remainder of the survey.

A supplement to the initial shipper population was made as grain container export workshop attendees were contacted by telephone to complete the survey. The workshop events were conducted by the Transportation and Marketing Programs of the United States Department of Agriculture (USDA) between 2000 and 2002. While 40 potential shippers were contacted by telephone to complete the survey, only 3 shippers were actively exporting grain or oilseed via container. Many participants contacted offered that they had not yet begun to actively employ the workshop knowledge gained about the export of grain and oilseed products. In addition, a segment of the workshop attendees were nongovernment entities seeking to gather information for their constituents but not actually planning to engage in market transactions. The addition of the 3 responses from the USDA workshop population increased survey response to 228, and the number of surveys completed by active grain and oilseed shippers to 48.

The public–private cooperation approach to survey development was a success in regard to collecting useful industry data and gaining an understanding of shippers in the industry. The resulting instrument includes a concise set of questions directed toward ascertaining baseline information about shippers involved in the export of containerized grain and oilseeds. The survey response rate of 37% is low, but if it is placed in the context of the wide rather than narrow scope used

to identify more than 600 potential respondents and the very competitive nature of a global grain business, these responses are assumed to reflect those of the industry.

The infrequency of shippers in the business population group suggests that third-party facilitators are common in managing the marketing and logistics of container shipments. In addition, it is somewhat difficult to distinguish a subset of the container shipping population, given the somewhat broad product categories that can be applied in the shipment bill of lading. The profile information presented in subsequent sections is based on 47 of 48 shipper responses; 1 survey response was discarded because the single product marketed via container was hay. Responses received for the survey are used to develop the profile of the containerized grain and oilseed industry that is presented in the following sections. While the profile may not offer holistic insight into this growing market segment, it provides valuable insight for an area that is largely void of public-source information needed to fulfill basic investment, planning, and policy activities.

INDUSTRY PROFILE

A mail and telephone survey of 610 container businesses elicited 228 responses, for a 37% response rate. Of those shippers, 20% confirmed that they are active in marketing grains and oilseeds via container. As mentioned, the infrequency of shippers in the business population group suggests third-party facilitators are common in managing the marketing and logistics of container shipments. In addition, the initial survey population was somewhat difficult to distinguish as a subset of the container shipping population, given the somewhat broad product categories that can be applied in the shipment bill of lading. Responses from 47 shippers that are active in exporting grain or oilseeds, or both, via container are used to develop a profile of the containerized grain and oilseed industry.

The profile is developed in the next four sections describing shipper characteristics, marketing practices, business activity, contract negotiation, and industry growth factors. The profile includes responses from 19 states covering 13 commodities. The limited sample size requires that information be reported for the national aggregate. In addition, individual commodity information is limited to only a few crops that are most commonly reported in the surveys. The geographic and product scope of responses does offer insight into the coverage that these responses allow for viewing this specialized segment of the grain and oilseed market.

Shipper Characteristics

The business size, in annual volumes, averaged 187 TEUs per year between 2000 and 2002. Average annual business volumes trended upward over the 3-year period, from 169 to 182 to 212, in 2000, 2001, and 2002, respectively. In addition to the upward trend in volumes, the number of shippers increased over the 3-year period. As more shippers entered the market in recent years, the number of respondents reporting containerized export grain and oilseed volumes increased by 38% from 29% in 2000 and to 46% in 2002. Total grain and oilseed TEUs reported by shippers increased from 7,459 to 9,766 TEUs between 2000 and 2002. Shipper volumes for 2002 are equal to 38% of the total volume of U.S. containerized grain and oilseed exports. Shipper respondents appear optimistic about future opportunities for containerized export of grain and oilseed products, for shipments are projected to continue increasing to 10,680 TEUs in 2004 and 11,695 TEUs in 2005. If the expected 2005 volumes are realized, respondents' containerized grain and oilseed export volumes will grow by 57% over the 5-year period.

The containerized grain and oilseed shipper respondents are generally experienced, for they have been in business for an average of 23 years, with 80% of the respondents in business for 10 years or more. Years of diversification into containerized shipping range from 2 to 42 years, with over half the respondents active in containerized marketing of grain for under 10 years. The business structure is predominately that of a corporation, with over two-thirds of the respondents operating under that arrangement. Independent and partnership organizations each accounted for 10% of the shipper respondents' business structures, with limited liability corporations and subsidiaries reported as other business structures.

Primary business locations for shipper respondents included 19 states, as illustrated in Figure 2. Primary intermodal terminals identified by shippers included 23 facilities from Seattle, Washington; Portland, Oregon; and Los Angeles, California, on the west coast to Columbus, Ohio, and Texas sites in Amarillo, Dallas, and Houston on the eastern and southern boundaries of facility locations. Washington hosts the greatest number of terminals identified by shippers; in addition to Seattle, the ports of Spokane, Pasco, and Tacoma are each identified as primary intermodal terminals in survey responses. Three Illinois locations accessed by shippers include Assumption, Beardstown, and Chicago. Other locations included Denver, Colorado; Lewiston and Twin Falls, Idaho; Detroit, Michigan; Dilworth and Minneapolis, Minnesota; Kansas City, Missouri; Omaha, Nebraska; and Memphis, Tennessee.

Distance from business location to primary intermodal terminal ranged from 0 to over 2,000 mi, averaging 366 for all shippers. Approximately 40% of the shippers are within 100 mi of their primary intermodal terminal. Considering the proximity of product to terminal, in regard to volume marketed by individual shippers, 30% of the volume requires drayage under 100 mi, and 76% is moved under 350 mi to reach the primary container terminal. Thus, the vast majority of grain and oilseed volume is originated from shippers within 350 mi of an intermodal terminal.

Market Practices

Gaining insight into market practices is important in understanding the fundamentals of the containerized grain and oilseed export market segment. This insight is useful in discussing the potential impacts of policy, research, and investment. Market practices consider the

FIGURE 2 State locations of grain and oilseed shippers.

scope and operation of the activities, such as contracts, market development, business management, and logistics.

Contract negotiation is a critical factor in the success of container market strategies. In the contract, the ocean carrier generally guarantees shipper terms, such as time, rate, and fees, in exchange for the shipper's guarantee of container volume over the life of the contract. Terms are specific to routes, and more than one route may be included in a single contract. Contract negotiation is complex. Therefore, shippers opt to involve a third party in the negotiation of a contract with the ocean carriers, or they completely contract out to a third party to handle logistics for market transactions. Also, volumes are usually inversely related to rates, so shippers may see an opportunity to access lower rates in accessing the third-party negotiated rates.

A majority of the shippers, 51%, responding to the survey handle negotiations themselves with ocean carriers in regard to rates and terms. Freight forwarders or brokers are second among possible alternatives for contract negotiation. The customer was identified as the party responsible for the container rates and service terms for 8% of the respondents. The Ocean Shipping Reform Act enacted in 1999 was seen as a possible catalyst for increased development of marketing consortia, but this activity appears to have been limited, for only 2% of shippers indicate contract negotiation through a marketing consortium (*3*).

Shippers reported that they negotiate annual contracts with an average of 83 foreign buyers. The number of buyers served by an individual shipper ranges from 1 to 600. Over half the respondents reported that they contract with 12 or fewer foreign buyers. Over half the shippers reported that the typical duration of their contracts is 12 months. The average duration of contracts is reported to be 9 months, with a range from 2 to 17 months.

Two final inquiries into shipper contracts indicate that lead time is often limited for the sales, and that the delivery point is usually specified in the sale contract. The lead time, or duration between contract signage and container shipment, averaged 4 months. Although the lead time ranged from 1 to 12 months, 1 month is the most commonly reported duration. Approximately one-third of survey respondents reported that shipment typically occurs within a month of contract signage. If average lead time is extended to 2 months, over 60% of respondents indicated that shipment typically will have occurred. Over three-quarters of the shippers indicated that the delivery point is specified at the time of sale, so the shipper has advance knowledge for routing. The lead time and delivery point may be an important factor in the ability of the shipper to cost-effectively access available container capacity and integrate the shipment into the global market channels.

One component of the container market movement that may or may not be included in the contract negotiation is drayage, or movement from shipper facility to container terminal. The use of freight forwarders dominates the options available to the shipper in repositioning the loaded container at the terminal. Approximately 48% of shippers indicated that a freight forwarder is hired to manage drayage activity. The alternatives of handling the drayage internally and contracting out to a trucking company are each used by 27% of the respondents. Only 13% of the respondents indicated that the ocean carrier handles drayage for their containerized grain and oilseed exports. Note that the percentages for both the contract negotiation party and drayage party total may total to a number greater than 100, because more than one alternative may be used by an individual shipper depending on factors such as shipment route, contract terms, and cost-effectiveness.

In regard to the geographic scope of markets, shippers were asked to specify which regions they have served with containerized field products. Global regions rather than countries are used to ensure confidentiality for individual business activities. The largest single region, in regard to the number of shippers reporting container shipments, is Asia. Approximately 91% of the shippers responding to the survey reported business activity within the Asian region. Europe is second regions identified as markets for U.S. exports of containerized grain and oilseed products, with 54% of shippers reporting activity in Europe. The Middle East is identified as a market by 22% of the respondents, making it third among the regions that shippers access in marketing containers. North America is fourth, with 17% of shippers indicating that they market via container within that market region. Regional markets with fewer than 10% of shipper respondents indicating activity are Africa, Australia, the Caribbean, South America, Commonwealth of Independent States, and India. The geographic scope in markets identified by shippers indicates a diverse customer base for this specialized segment of the grain and oilseed industry.

For the researchers to gain insight into the potential for market development and current market activities, shippers were asked to indicate their reason for shipping via container. Given an array of customers served by the containerized export market, several factors are indicated in shippers' responses. The most common reasons for containerization are buyer request, food grade product, and nongenetically modified products with 54%, 30%, and 28% of respondents offering those reasons, respectively. Slightly more than 20% of shippers suggested that deficiencies in foreign infrastructure and small quantity sales made containerization the most effective method for product delivery. Shipment of organic products was indicated as a reason for containerized shipping by 17% of the respondents. Less commonly offered factors for containerized shipping were just-in-time delivery, USDA program sales, and lower cost than air freight.

Shippers were also asked to indicate which resources they use to monitor the market and manage their businesses. That information may be useful in disseminating new information, garnering industry data, and understanding the current knowledge network. Over half the respondents indicated that they use the Internet for market and business information. Over 40% indicated that they use consultants, brokers, and printed media to monitor the market and manage their business. Public agencies, both state and federal, are identified as information sources for approximately one-third of the respondents. Less common sources of market intelligence identified by respondents include shipper organizations, international agencies, customers, other businesses, and trade organizations.

Container Export Activity

Through the survey, shippers were also asked to provide more commodity specific information with regard to these shipments, such as composition, packaging, premiums, and export region. Owing to the limited number of responses, information on commodity level should be used with caution. The data do, however, offer a rare opportunity to gain a greater understanding of this segment of the grain and oilseed industry.

Soybean exports dominate volumes among the containerized grain and oilseed export activity reported by shippers (Figure 3). Soybean exports account for 73% of total grain and oilseed volume reported by survey respondents. Pulse crop exports are 18% of the volumes reported. Wheat volumes account for 5% of the total. The remaining 7% of the export volume consists of commodities

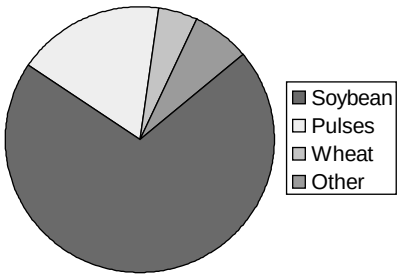

FIGURE 3 Containerized grain and oilseed exports.

including buckwheat, corn, popcorn, and sunflowers. Given the information summaries generated from PIERS for 2002, soybeans may be overrepresented and corn underrepresented in the survey commodity composition, but the scope of commodities and dominance of soybeans are reasonable. Soybeans, pulses, corn, and wheat account for 47%, 18%, 9%, and 1% of the 2002 grain and oilseed exports, respectively, in a summary of PIERS information (*1*).

Shippers were asked about the marketing channels used for distribution of their containerized product. Based on previous data analysis, the port regions in the Pacific Northwest, along the Atlantic, and in the California coastal region were identified as prominent gateways for grain and oilseed exports (*2*). Among U.S. port regions, the Pacific Northwest dominates grain and oilseed export, for shippers attribute 66% of their annual shipments to this region. The prevalence of that region in the marketing of containerized grain and oilseed products is consistent with previous estimates based on PIERS data summaries (*1*). The Atlantic region is second in volume, based on survey responses, accounting for 18% of the total container movement. The California region including the ports of Long Beach and Los Angeles is attributed with 13% of the volume. Shippers also reportedly move containers through terminals through ports in New York, Florida, and Texas.

Shippers were also asked whether they marketed via container within U.S. borders. Responses indicated that doing so is more common with commodities included in the other commodities category, for 22% of these shippers indicated they did market via container to U.S. destinations. In the case of soybean shippers, 18% indicated that they had shipped to U.S. customers via container. None of the pulse crop shippers indicated that they delivered, via container, to customers in the United States.

A number of alternatives exist for packaging products for the containerized move through port and on to the customer. Three common methods of packaging are bag, tote, and bulk. The bag product is typically packaged in a 50-lb bag that can be easily moved by hand. The tote or minitote is a large bag, often moved on a pallet, usually weighing 1,000 lb or more. Bulk packaging may also be achieved by transloading the bulk product directly into the container, which may or may not be lined with plastic.

Bags are the most prevalent form of packaging for containerized grain and oilseed shipments. Shippers indicated that this is the most common form of packaging across the soybean, pulse, wheat, and other export products. Bag and bulk are the most common forms of packaging for containerized soybean export, because 99% and 90% of shippers report using those packaging options, respectively. Approximately 60% of the soybean shippers employ tote packaging alternatives. Shippers of pulse crops are more likely to use bags for shipping their product, for 75% of the respondents indicated that they use this method. The bulk and tote alternatives are used exclusively, or in addition to the bag method, by 50% and 12% of the shippers, respectively. The bag option is used by all the wheat respondents, in addition to some use of bulk and little use of the tote. The pattern is similar for other commodities, for 81% of shippers reported that they use the bag method, and 48% and 26% use the bulk and tote packaging options, respectively. The prevalence of bags in the container grain and oilseed shipments is expected, because the ease of handling without mechanical assistance is often necessary for products marketed via container. For example, these shipments may be food aid or items shipped to a customer as a small-scale specialty commodity.

Shippers reportedly receive an average $5 premium per hundredweight for containerized grain and oilseed exports, compared with the premium for the local bulk market. Soybean premiums ranged from $1 to $16.50 per hundredweight. The average soybean premium is $4.60 per hundredweight or $2.75 per bushel. The premium represents an increase in producer revenue of 51%, given the average price received by farmers in 2002 of $5.40 (*4*). The net effects to producer return are estimated to be increased by 28% considering the reported $2.75 premium, less the additional marketing costs that are estimated to be $1.22 per bushel. The projected net return is based on an economic engineering estimate of the additional marketing costs that probably underestimates the additional marketing costs (*5*). In addition to dynamic market variables that have an impact on these marketing costs, the model does not consider any additional opportunity cost, production or handling cost, or risk premium.

Shippers report average premiums for pulse crops range from 50¢ to $3 per hundredweight. The average premium for this commodity class is $1.10 per hundredweight. Due to limited responses for premiums received for other commodities, the remaining premium data is grouped into the "other commodity" category. The average premium for commodities, including crops such as wheat, corn, popcorn, and sunflowers, is reported to be $9.30 per hundredweight with a wide range of premiums from $1 to $20 per hundredweight.

Market Growth Factors

Statistics indicate that containerized marketing of grain and oilseeds has been an established specialty segment of the U.S. agricultural industry. Information on shipper volumes and industry trends presented in previous sections suggests that this segment may be poised for additional growth. Therefore, it is important to ascertain the relevance of an array of market factors that may lead to or diminish potential for this market growth. Shippers' opinions about the relevance of factors provide important insight that may be used in assessing issues related to this industry. For the researchers to attain opinions, shippers were asked to rank the relevance of 14 factors to the future growth of the containerized agricultural product export trade. They ranked the factors on a scale of 1 to 5, with 1 indicating that the factor is not important and 5 indicating that the factor is very important (Table 2).

Among the market factors, ocean shipping rates were identified as the most important factor for the success of containerized trade, with a rating of 4.6. Shipper ratings of 4.2 and 4.0, respectively, indicated that additional critical factors are the availability of containers and rail shipping rates for containers. Ocean liner routes and services, distance to container terminal, and foreign buyer information are also rated with above-average importance, ranging from 3.6 to 3.9 on the scale.

TABLE 2 Market Growth Factors

Factor	Shipper Rating
Distance to Container Terminal	3.7
Foreign Buyer Information	3.6
State Truck Weight Limits	3.4
Availability of Containers	4.2
Farm Program	2.3
Inspection/Phytosanitary Requirements	3.4
Access to Market Information	3.4
Ocean Liner Routes and Services	3.9
Ocean Shipping Rates for Containers	4.6
Rail Shipping Rates for Containers	4.1
Barge Container Service Rates	2.7
Container Logistics Information	3.3
Financing	3.2

CONCLUSIONS

Since its globalization in the 1960s, containerization has moved from specialization to generalization in regard to product transport. Technology advancements and market innovations have significantly reduced cost and service barriers once prohibitive for lower-value commodity movements. The U.S. agricultural industry is a heavy user of containers, especially for transporting higher-value products, such as fruits, vegetables, and processed foods. More recently, U.S. grain and oilseed shippers also have begun to use the flexibility of containerization to ship to customers worldwide. Traditionally, these lower-value bulk products move in train- and vessel-size shipments.

The objective of this research was to create a profile of the U.S. grain and oilseed industry. The profile is based on survey responses from 47 shippers located across 19 states. The profile considers shipper characteristics, market practices, container export activity, and market growth factors.

Containerized grain and oilseed shippers are generally experienced, having been in business an average of 23 years and 80% in business for 10 years or more. The containerized marketing activity, however, is a newer addition to the business mix, for more than half have marketed via container for fewer than 10 years. Annual individual business TEU volumes increased from an average 169 in 2000 to 212 in 2002. Respondents reportedly marketed a total of 9,766 TEUs of grain and oilseeds via container in 2002. Shippers expect these volumes to increase 20% over the next 2 years. Soybeans dominate the commodity mix, accounting for 73% of the volume reported by shippers. A majority of the containerized grain and oilseed export volume, 76%, is originated by shippers located within 350 mi of their primary container terminal. The Pacific Northwest dominates U.S. seaports, given shippers' use of gateways in moving products from the inland production points to ocean vessel for shipment to overseas customers.

Dynamic market fundamentals influence the profitability of containerized grain and oilseed shipments as global container trade dictates rate levels and equipment. Shippers indicated an average premium of $5 per hundredweight for container shipments, relative to the local bulk market price. Business marketing practices and exogenous market factors affect the difference in net return to shippers, or the bulk versus containerized grain sale. Ocean service contract negotiation is a critical factor in this profitability. Over half the respondent shippers negotiate contract terms with their ocean carriers. The drayage for shipments made under some contracts is handled by the ocean carrier for 13% of shippers. Most often, freight forwarders are hired to manage the drayage for container shipments.

Shippers indicated that ocean shipping rates are the most critical factor in the potential growth of their businesses. Other important factors include availability of containers and rail rates for shipping containers. Shipper responses also suggest that ocean liner routes and services, distance to container terminal, and foreign buyer information have greater than average significance in regard to factors important to the success of the containerized grain and oilseed market sector. These insights of shippers into growth factors and the industry shipper profile presented in this research offer a unique opportunity to gain insight into a growing segment of the grain and oilseed industry. The information may be an asset in future planning, policy, research, and investment discussions.

REFERENCES

1. Port Import Export Reporting Service (PIERS), Data Subscription Services. *Journal of Commerce*, New York, 1999–2002.
2. Vachal, K., and H. Reichert. *U.S. Containerized Grain and Oilseed Exports: Industry Profile Phase I.* MPC Report No. 02-132. Upper Great Plans Transportation Institute, North Dakota State University, Fargo, 2002.
3. National Unaffiliated Shippers Association, Ocean Shipping Reform Act. www.nusa.net/nusafmc.htm. Accessed May 2, 2003.
4. National Agricultural Statistics Service, U.S. Department of Agriculture. Agricultural Statistics 2003. www.usda.gov/nass/pubs/agr03/acro03.htm. Accessed April 12, 2003.
5. Vachal, K., and H. Reichert. *Identity Preserved Grain: Logistical Overview*. UGPTI Staff Paper No. 143, North Dakota State University, Fargo, 2000.

Publication of this paper sponsored by Agricultural Transportation Committee.